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Report on the individual review of the annual submission of Slovenia submitted in 2014*

* In the symbol for this document, 2014 refers to the year in which the inventory was submitted, and not to the year of publication.

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Contents

		Paragraphs	Page
I.	Introduction and summary	1–6	3
II.	Technical assessment of the annual submission	7–105	7
	A. Overview	7–19	7
	B. Energy	20–39	12
	C. Industrial processes and solvent and other product use	40–47	16
	D. Agriculture	48–55	19
	E. Land use, land-use change and forestry	56–71	21
	F. Waste	72–83	24
	G. Supplementary information required under Article 7, paragraph 1, of the Kyoto Protocol	84–105	26
III.	Conclusions and recommendations	106–107	31
	A. Conclusions	106	31
	B. Recommendations	107	32
IV.	Questions of implementation	108	36
Annexes			
I.	Information to be included in the compilation and accounting database		37
II.	Documents and information used during the review		42
III.	Acronyms and abbreviations		44

I. Introduction and summary

1. This report covers the review of the 2014 annual submission of Slovenia, coordinated by the UNFCCC secretariat, in accordance with the "Guidelines for review under Article 8 of the Kyoto Protocol" (decision 22/CMP.1) (hereinafter referred to as the Article 8 review guidelines). The review took place from 29 September to 4 October 2014 in Bonn, Germany, and was conducted by the following team of nominated experts from the UNFCCC roster of experts: generalist – Mr. Paul Filliger (Switzerland) and Mr. Yuriy Pyrozhenko (Ukraine); energy – Ms. Duduzile Nhlengethwa-Masina (Swaziland), Mr. Peter Seizov (Bulgaria) and Mr. Nguyen Tran Hong (Viet Nam); industrial processes and solvent and other product use – Mr. Stanford Mwakasonda (United Republic of Tanzania) and Ms. Emilija Poposka (the former Yugoslav Republic of Macedonia); agriculture – Ms. Olga Gavrilova (Estonia) and Mr. Simon Wear (New Zealand); land use, land-use change and forestry (LULUCF) – Mr. Nagmeldin Elhassan (Sudan), Mr. Craig Elvidge (New Zealand), Mr. Sabin Guendehou (Benin) and Mr. Agustin Inthamoussu (Uruguay); and waste – Mr. Qingxian Gao (China) and Ms. Mayra Rocha (Brazil). Mr. Gao and Mr. Wear were the lead reviewers. The review was coordinated by Mr. Vitor Gois Ferreira (UNFCCC secretariat).

2. In accordance with the Article 8 review guidelines, a draft version of this report was sent to the Government of Slovenia, which provided comments that were considered and incorporated, as appropriate, into this final version of the report. All encouragements and recommendations in this report are for the next annual submission, unless otherwise specified. The expert review team (ERT) notes that the 2013 annual review report of Slovenia was published after 15 April 2014, which may have affected the Party's ability to implement recommendations and encouragements made in the previous review report.

3. All recommendations and encouragements included in this report are based on the ERT's assessment of the 2014 annual submission against the Article 8 review guidelines. The ERT has not taken into account the fact that Parties will prepare the submissions due by 15 April 2015 using the revised "Guidelines for the preparation of national communications by Parties include in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual greenhouse gas inventories" (hereinafter referred to as the UNFCCC Annex I inventory reporting guidelines) adopted through decision 24/CP.19. Therefore, when preparing the 2015 annual submissions, Parties should evaluate the implementation of the recommendations and encouragements in this report, in the context of those guidelines.

4. In 2012, the main greenhouse gas (GHG) emitted by Slovenia was carbon dioxide (CO_2), accounting for 82.9 per cent of total GHG emissions[1] expressed in CO_2 equivalent (CO_2 eq), followed by methane (CH_4) (9.9 per cent) and nitrous oxide (N_2O) (5.9 per cent). Hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF_6) collectively accounted for 1.4 per cent of the overall GHG emissions in the country. The energy sector accounted for 81.8 per cent of total GHG emissions, followed by the agriculture sector (9.9 per cent), the industrial processes sector (5.4 per cent), the waste sector (2.6 per cent) and the solvent and other product use sector (0.3 per cent). Total GHG emissions amounted to 18,910.98 Gg CO_2 eq and decreased by 5.7 per cent between the

[1] In this report, the term "total GHG emissions" refers to the aggregated national GHG emissions expressed in terms of CO_2 eq excluding LULUCF, unless otherwise specified.

base year[2] and 2012. The ERT concluded that the description in the national inventory report (NIR) of the trends for the different gases and sectors is reasonable.

5. Tables 1 and 2 show GHG emissions from source categories included in Annex A to the Kyoto Protocol (hereinafter referred to as Annex A sources), emissions and removals from the LULUCF sector under the Convention and emissions and removals from activities under Article 3, paragraph 3, and, if any, elected activities under Article 3, paragraph 4, of the Kyoto Protocol (KP-LULUCF), by gas and by sector and activity, respectively.

6. Information to be included in the compilation and accounting database can be found in annex I to this report.

[2] "Base year" refers to the base year under the Kyoto Protocol, which is 1986 for CO_2, CH_4 and N_2O, and 1995 for HFCs, PFCs and SF_6. The base year emissions include emissions from source categories included in Annex A to the Kyoto Protocol only.

Table 1

Greenhouse gas emissions from Annex A sources and emissions/removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol by gas, base year[a] to 2012

			Gg CO_2 eq								Change (%)
		Greenhouse gas	Base year	1990	1995	2008	2009	2010	2011	2012	Base year–2012
Annex A sources		CO_2	16 355.78	14 791.98	15 011.07	18 003.01	16 061.10	16 136.41	16 177.91	15 674.76	−4.2
		CH_4	2 164.59	2 119.44	2 061.85	2 016.71	1 953.65	1 920.85	1 915.79	1 868.29	−13.7
		N_2O	1 387.99	1 265.26	1 324.72	1 139.01	1 139.50	1 108.93	1 106.81	1 106.53	−20.3
		HFCs	31.76	NA, NO	31.76	188.05	195.55	214.97	216.93	218.63	588.4
		PFCs	106.48	257.44	106.48	20.91	7.43	13.68	28.61	25.70	−75.9
		SF_6	12.72	10.30	12.72	16.68	15.92	16.54	16.51	17.06	34.2
KP-LULUCF	Article 3.3[b]	CO_2				161.12	300.36	338.43	271.19	220.12	
		CH_4				NO	NO	NO	NO	NO	
		N_2O				0.88	1.14	1.37	1.50	1.64	
	Article 3.4[c]	CO_2	NA			−6 294.57	−6 295.20	−6 295.43	−6 285.74	−6 255.67	NA
		CH_4	NA			0.36	0.89	0.40	1.23	4.62	NA
		N_2O	NA			0.06	0.16	0.07	0.22	0.83	NA

Abbreviations: Annex A sources = source categories included in Annex A to the Kyoto Protocol, KP-LULUCF = land use, land-use change and forestry emissions and removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, NA = not applicable, NO = not occurring

[a] The base year for Annex A sources refers to the base year under the Kyoto Protocol, which is 1986 for CO_2, CH_4 and N_2O, and1995 for HFCs, PFCs and SF_6. For activities under Article 3, paragraph 3, of the Kyoto Protocol and forest management under Article 3, paragraph 4, only the inventory years of the commitment period must be reported

[b] Activities under Article 3, paragraph 3, of the Kyoto Protocol, namely afforestation and reforestation, and deforestation

[c] Elected activities under Article 3, paragraph 4, of the Kyoto Protocol, including forest management, cropland management, grazing land management and revegetation

Table 2
Greenhouse gas emissions by sector and activity, base year[a] to 2012

			Gg CO_2 eq							Change (%)
	Sector	Base year	1990	1995	2008	2009	2010	2011	2012	Base year–2012
Annex A sources	Energy	16 090.46	14 401.01	14 906.36	17 492.96	15 869.25	15 945.58	15 990.14	15 477.05	-3.8
	Industrial processes	1 181.41	1 317.65	1 001.68	1 327.19	971.90	987.59	1 014.32	1 013.58	-14.2
	Solvent and other product use	81.90	43.40	17.25	27.59	31.00	30.38	49.29	60.76	-25.8
	Agriculture	2 210.95	2 134.13	2 041.87	1 963.01	1 994.73	1 957.00	1 902.75	1 871.26	-15.4
	Waste	493.59	548.24	581.43	573.62	506.27	490.83	506.05	488.34	-1.3
	LULUCF	NA	-1 484.14	-1 478.25	-4 439.91	-4 422.78	-4 418.27	-4 398.97	-4 355.77	NA
	Total (with LULUCF)	**NA**	**16 960.28**	**17 070.35**	**16 944.47**	**14 950.37**	**14 993.11**	**15 063.59**	**14 555.22**	**NA**
	Total (without LULUCF)	**20 059.32**	**18 444.42**	**18 548.59**	**21 384.37**	**19 373.15**	**19 411.38**	**19 462.56**	**18 910.98**	**-5.7**
	Other[b]	NA	NA	NA	NA	NA	NA	NA	NA	NA
KP-LULUCF	Article 3.3[c] Afforestation and reforestation				NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	
	Article 3.3[c] Deforestation				162.00	301.50	339.80	272.69	221.76	
	Total (3.3)				**162.00**	**301.50**	**339.80**	**272.69**	**221.76**	
	Article 3.4[d] Forest management				-6 294.15	-6 294.15	-6 294.96	-6 284.29	-6 250.22	
	Article 3.4[d] Cropland management	NA			NA	NA	NA	NA	NA	NA
	Article 3.4[d] Grazing land management	NA			NA	NA	NA	NA	NA	NA
	Article 3.4[d] Revegetation	NA			NA	NA	NA	NA	NA	NA
	Total (3.4)	**NA**			**-6 294.15**	**-6 294.15**	**-6 294.96**	**-6 284.29**	**-6 250.22**	NA

Abbreviations: Annex A sources = source categories included in Annex A to the Kyoto Protocol, KP-LULUCF = LULUCF emissions and removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, LULUCF = land use, land-use change and forestry, NA = not applicable, NO = not occurring.

[a] The base year for Annex A sources is the base year under the Kyoto Protocol, which is 1986 for CO_2, CH_4 and N_2O, and 1995 for HFCs, PFCs and SF_6. For activities under Article 3, paragraph 3, of the Kyoto Protocol and forest management under Article 3, paragraph 4, only the inventory years of the commitment period must be reported.

[b] Emissions/removals reported in the sector other (sector 7) are not included in Annex A to the Kyoto Protocol and are therefore not included in national totals.

[c] Activities under Article 3, paragraph 3, of the Kyoto Protocol, namely afforestation and reforestation, and deforestation.

[d] Elected activities under Article 3, paragraph 4, of the Kyoto Protocol, including forest management, cropland management, grazing land management and revegetation.

II. Technical assessment of the annual submission

A. Overview

1. Annual submission and other sources of information

7. The 2014 annual submission was submitted on 15 April 2014; it contains a complete set of common reporting format (CRF) tables for the period 1986–2012 and an NIR. Slovenia further submitted a revised NIR on 27 May 2014. Slovenia also submitted the information required under Article 7, paragraph 1, of the Kyoto Protocol, including information on: activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, accounting of Kyoto Protocol units, changes in the national system and in the national registry and the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol. The standard electronic format (SEF) tables were submitted on 15 April 2014. The annual submission was submitted in accordance with decision 15/CMP.1.

8. The list of other materials used during the review is provided in annex II to this report.

2. Questions of implementation raised in the 2013 annual review report

9. The ERT noted that no questions of implementation have been raised in the 2013 annual review report.

3. Overall assessment of the inventory

10. Table 3 contains the ERT's overall assessment of the annual submission of Slovenia. For recommendations for improvements for specific categories, please see the paragraphs cross-referenced in the table.

Table 3
The expert review team's overall assessment of the annual submission

Issue	*Expert review team assessment*	*General findings and recommendations*
The ERT's findings on completeness		
Annex A sources[a]	Complete	Mandatory: none Non-mandatory: "NE" is reported for: CH_4 emissions from enteric fermentation from poultry; recovery of CH_4 emissions from industrial wastewater; CO_2 emissions from paint application, degreasing and dry cleaning and chemical products, and manufacture and processing; N_2O emissions from aerosol cans; potential HFC emissions from refrigeration and air-conditioning equipment, foam blowing and fire extinguishers; potential SF_6 emissions from electrical equipment; potential SF_6 emissions in imported and exported products The ERT encourages the Party to estimate and report emissions from all non-mandatory

Item	Expert review team assessment	Central findings and recommendations
		categories
Land use, land-use change and forestry[c]	Not complete	Mandatory: "NA" is reported for: carbon stock change for living biomass from perennial cropland remaining perennial cropland (see para. 67 below)
		The ERT recommends that the Party estimate and report emissions from all mandatory categories
		Non-mandatory: "NE" is reported for: carbon stock changes for all carbon pools from wetlands remaining wetlands and CH_4 and N_2O emissions from peatlands in wetlands (drainage of soils and wetlands) and from settlements remaining settlements and land converted to settlements; and CO_2, N_2O and CH_4 emissions from harvest wood products (other (LULUCF))
		The ERT encourages the Party to estimate and report emissions from all non-mandatory categories
		Please see paragraph 58 below for category-specific findings
KP-LULUCF	Complete	
The ERT's findings on recalculations and time-series consistency		
Transparency of recalculations	Sufficiently transparent	Please see paragraph 26 below
Time-series consistency	Sufficiently consistent	Please see paragraphs 43 and 75 below
The ERT's findings on QA/QC procedures	Sufficient	Party has elaborated a QA/QC plan and has implemented tier 1 QA/QC procedures in accordance with that plan. The ERT finds that there are still some inconsistencies between the CRF tables and the NIR and in some key categories sector-specific QC is missing
		Please see paragraphs 12, 15, 25, 27, 28, 29, 30, 37, 42, 44,46 and 100 below
The ERT's findings on transparency	Sufficiently transparent, except for the LULUCF sector	Please see paragraphs 26, 28, 32, 34, 46, 47, 50, 53–55, 74, 79, 80, 83 and 87 below for category-specific recommendations

Abbreviations: Annex A sources = source categories included in Annex A to the Kyoto Protocol, CRF = common reporting format, ERT = expert review team, KP-LULUCF = LULUCF emissions and removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, LULUCF = land use, land-use change and forestry, NA = not applicable, NE = not estimated, NIR = national inventory report, QA/QC = quality assurance/quality control.

[7] The assessment of completeness by the ERT considers only the completeness of reporting of mandatory categories (i.e. categories for which methods and default emission factors are provided in the Intergovernmental Panel on Climate Change (IPCC) *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories*, the IPCC *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories* or the IPCC *Good Practice Guidance for Land Use, Land-Use Change and Forestry*).

4. Description of the institutional arrangements for inventory preparation, including the legal and procedural arrangements for inventory planning, preparation and management

Inventory planning

11. The NIR and additional information provided by the Party during the review describe the national system for the preparation of the inventory. There were changes to the national system for the 2014 annual submission, as identified by the Party in its NIR (chapter 13.1) in response to strong recommendations made in the previous review report: mainly to ensure sufficient capacity for inventory preparation. In response to a question raised by the ERT during the review, Slovenia explained that ministries have secured additional administrative resources. A control team of experts has been officially nominated from different bodies: Ministry of Agriculture and the Environment (five persons), Slovenian Environment Agency (three persons, the new person joining the inventory team since the last annual submission is the quality assurance/quality control (QA/QC) manager), Slovenian Forestry Institute (three persons), Agricultural Institute of Slovenia (two persons). The whole Slovenian national inventory management team is presented in the QA/QC plan. The ERT commends Slovenia for the additional administrative resources which have been secured.

12. Further recommendations made in the previous review report concerning the improvement of the national system have also been realised, in particular: defining and allocating specific responsibilities in the inventory development process; processing, archiving and QA/QC procedures (the focus of QA/QC activity was on the LULUCF sector and on the improvement of the transparency of the NIR); elaborating an inventory QA/QC plan which describes specific QC procedures; identifying key categories using a revised list of subcategories; providing a quantitative estimate of inventory uncertainty for each category and for the inventory in total; implementing general inventory QC procedures (tier 1) in accordance with the QA/QC plan and following the Intergovernmental Panel on Climate Change (IPCC) *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories* (hereinafter referred to as the IPCC good practice guidance).

13. The Slovenian Environment Agency has overall responsibility for the national inventory. The Ministry of Agriculture and the Environment, the Ministry of Finance, the Ministry of Infrastructure and Spatial Planning, the Ministry of the Interior, the Energy Agency, the Agricultural Institute and the Forestry Institute are also involved in the preparation of the inventory. The Statistical Office of the Republic of Slovenia (SORS) is the main source of activity data (AD).

14. The NIR (page 15) states that in 2014, a new agreement was signed between SORS and the Environment Agency which consists of supplying more datasets and update time lines. A Memorandum of Understanding has been concluded with the institutions that participate in inventory preparation, binding these institutions to submit high-quality and verified data to the Environment Agency on time.

15. The NIR states that in 2014 a new and detailed QA/QC plan came into force which summarizes roles and responsibilities, general and source-specific QC procedures, QA procedures, verification, documentation, archiving and reporting. The ERT concluded that the overall organization of the national system has been very much improved and will

support the estimating and timely reporting of GHG inventories. The ERT commends Slovenia for these efforts to improve the inventory planning and preparation.

Inventory preparation

16. Table 4 contains the ERT's assessment of Slovenia's inventory preparation process. For improvements related to specific categories, please see the paragraphs cross-referenced in the table.

Table 4

Assessment of inventory preparation by Slovenia

Issue	*Expert review team assessment*	*ERT findings and recommendations*
Key category analysis		
Was the key category analysis performed in accordance with the IPCC good practice guidance and the IPCC good practice guidance for LULUCF?	Yes	Level and trend analysis performed, including and excluding LULUCF
Approach followed?	Tier 1	In response to a recommendation in the previous review report, Slovenia disaggregated the CO_2 emissions from stationary and mobile sources by fuel type, which resulted in a larger number of key categories compared with the 2013 submission. In 2010 a tier 2 key category analysis was performed. The ERT encourages Slovenia to repeat the tier 2 analysis regularly
Were additional key categories identified using a qualitative approach?	No	A qualitative analysis has been performed (in response to a recommendation made in the previous review report) but no additional key categories have been defined
Has the Party identified key categories for activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol following the guidance on establishing the relationship between the activities under the Kyoto Protocol and the associated key categories in the UNFCCC inventory?	Yes	
Does the Party use the key category analysis to prioritize inventory improvements?	Yes	
Assessment of uncertainty analysis		
Approach followed?	Tier 1	

Issue	*Expert review team assessment*	*ERT findings and recommendations*
Was the uncertainty analysis carried out in accordance with the IPCC good practice guidance and the IPCC good practice guidance for LULUCF?	Yes	The level uncertainty (including LULUCF) is significantly lower than in the previous submission because of lower removals in forest land remaining forest land reported in the 2014 annual submission compared with the 2013 submission
Quantitative uncertainty (including LULUCF)	Level = 15.4% Trend = 2.8%	
Quantitative uncertainty (excluding LULUCF)	Level = 6.8% Trend = 2.7%	

Abbreviations: ERT = expert review team, IPCC good practice guidance = the Intergovernmental Panel on Climate Change (IPCC) *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories*, IPCC good practice guidance for LULUCF = IPCC *Good Practice Guidance for Land Use, Land-Use Change and Forestry*, LULUCF = land use, land-use change and forestry.

Inventory management

17. Slovenia has a centralized archiving system, which includes the archiving of disaggregated emission factors (EFs) and AD, and documentation on how these factors and data have been generated and aggregated for the preparation of the inventory. The archived information also includes internal documentation on QA/QC procedures, external and internal reviews, and documentation on annual key categories and key category identification and planned inventory improvements. All data are archived at the Slovenian Environment Agency with backup systems. The archiving process is described in the QA/QC plan of July 2014 which has been made available to the ERT. Slovenia is developing a structured centralized archiving system, in response to a recommendation made in the 2013 in-country review. The process is not yet implemented, but according to the NIR it will be implemented soon. The ERT reiterates the strong recommendation in the previous review report that Slovenia fully implement the system as described in the QA/QC plan and report on the implementation.

5. Follow-up to previous reviews

18. The in-country review of 2013 formulated strong recommendations concerning the national system, including that the Party: ensure sufficient capacity; define and allocate specific responsibilities; elaborate an inventory QA/QC plan; identify key source categories including activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol; provide a quantitative estimate of inventory uncertainty for each source category; implement general inventory QC procedures; and archive inventory information in a structured process. All the recommendations have been implemented, except for the archiving process which is still in development (see para. 17 above). In addition, further recommendations from previous review reports have been addressed, for example: improved transparency of the NIR; better justification for the selection of country-specific parameters; improved uncertainty estimates; and improved completeness.

19. Recommendations from previous reviews that have not yet been implemented, as well as issues the ERT identified during the 2014 annual review, are discussed in the relevant sectoral chapters of the report and in table 9 below.

B. Energy

1. Sector overview

20. The energy sector is the main sector in the GHG inventory of Slovenia. In 2012, emissions from energy sector amounted to 15,477.05 Gg CO_2 eq, or 81.8 per cent of total GHG emissions. Since 1986, emissions have decreased by 3.8 per cent. The key drivers for the fall in emissions and for the fluctuations in the energy sector include: the transition of Slovenia's economy during the period 1986–1991; the economic growth and revival of industry during the period 1992–1997; the availability of electricity from the Krsko nuclear power plant; the extent of 'gasoline tourism' from neighbouring countries; the increase in consumption of electricity and road transportation following economic growth during the years 1999–2007; and the global economic crisis of 2008, which mostly affected Slovenia's emissions from manufacturing industries and construction and from road transportation in the period 2009–2012. Within the sector, 38.7 per cent of the emissions were from energy industries, followed by 37.3 per cent from transport, 11.2 per cent from the category other sectors and 10.6 per cent from manufacturing industries and construction. Fugitive emissions from solid fuels accounted for 2.1 per cent, while fugitive emissions from oil and natural gas accounted for 0.1 per cent of emissions. The remaining 0.02 per cent of emissions was from other (fuel combustion).

21. Slovenia has made recalculations between the 2013 and 2014 annual submissions for this sector. The most significant recalculations made by the Party between the 2013 and 2014 annual submissions were in the following categories: public electricity and heat production (revision of the CO_2 EF, the correction of an error affecting N_2O emissions from other fuel use (waste incineration) in the period 2009–2011); petroleum refining and manufacturing of solid fuels and other energy industries (the reallocation of fuel used from petroleum refining to manufacture of solid fuels and other energy industries); residential (estimates of consumption of sub-bituminous coal were included in emission estimates for the period 2006–2008, based on interpolations because data were not available); and fugitive emissions from natural gas (correction of the length of gas transmission and distribution systems). Compared with the 2013 annual submission, the recalculations increased emissions in the energy sector for 2011 by 7.44 Gg CO_2 eq (0.05 per cent), and increased total national emissions by 0.04 per cent. The recalculations were adequately explained in the NIR.

2. Reference and sectoral approaches

22. Table 5 provides a review of the information reported under the reference approach and the sectoral approach, as well as comparisons with other sources of international data. Issues identified in table 5 are more fully elaborated in paragraphs 23–28 below.

Table 5
Review of reference and sectoral approaches

Issue	*Expert review team assessment*	*Paragraph cross references*
Difference between the reference approach and the sectoral approach	Energy consumption: −0.18 PJ, −0.10%	

Issue	Expert review team assessment	Paragraph cross-reference
	CO_2 emissions: 92.75 Gg CO_2 eq; 0.63%	
Are differences between the reference approach and the sectoral approach adequately explained in the NIR and the CRF tables?	Yes	23, 25
Are differences with international statistics adequately explained?	Yes	
Is reporting of bunker fuels in accordance with the UNFCCC reporting guidelines?	Yes	26, 27
Is reporting of feedstocks and non-energy use of fuels in accordance with the UNFCCC reporting guidelines?	Yes	

Abbreviations: CRF = common reporting format, NIR = national inventory report, UNFCCC reporting guidelines = 'Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual inventories'.

Comparison of the reference approach with the sectoral approach and international statistics

23. The ERT noted that, for the period 1986–2012, the differences in the estimates of CO_2 emissions between the reference and sectoral approaches are generally less than 2.0 per cent, with the exception of 1992 and the period 1995–1999, for which the differences range between 2.4 per cent (1992) and 4.2 per cent (1999). However, the Party has not explained in the NIR and in the CRF tables why the differences in the estimates for those five years exceed 2.0 per cent. Therefore, in line with the previous review report, the ERT reiterates the encouragement that Slovenia examine the causes of the differences between the reference and sectoral approaches that exceed 2.0 per cent and report thereon in the NIR.

24. The ERT noted that in the energy balance (annex 4 of the NIR), there are no data on losses and statistical differences. The ERT notes that it is useful to compare such data to fugitive emission estimates (e.g. natural gas losses can be compared with fugitive emission estimates). The ERT recommends that Slovenia make all possible efforts to provide more information in the national energy balance tables and provide comparisons of these data and emission estimates in the NIR, as a verification procedure.

25. The ERT noted that annex 4 of the NIR (CO_2 reference approach and comparison with sectoral approach and relevant information on the national energy balance) was not updated for all data. For example, the information on lubricants in annex 4, table 3, for lubricants in 2004 and 2005 is not in line with the information on lubricants indicated in table 3.1.10 of the NIR and in CRF table 1.A(d). Therefore, the ERT recommends that the Party ensure the consistency of information provided in the CRF tables and the NIR, and enhance QC procedures to ensure that such inconsistencies and errors do not occur.

International bunker fuels

26. The ERT noted that CO_2 emission from marine bunkers have been recalculated for the period 2005–2011 with a revision of the CO_2 EF for residual fuel oil to 76.60 t CO_2/TJ from 77.60 t CO_2/TJ as reported in the 2013 annual submission. The ERT could not find any explanation for this recalculation in the NIR. Therefore, the ERT recommends that the Party provide transparent explanations for recalculations in the next annual submission.

27. The ERT also noted that the emissions reported in table 3.1.5 of the NIR are different from the emissions reported in CRF table 1.C for the years 2005–2012. For example, the NIR reports GHG emissions for residual fuel used in marine bunkers for 2008 as 235.0 Gg CO_2 eq whereas CRF table 1.C reports these emissions as 238.09 Gg CO_2 eq. The ERT recommends that the Party ensure the consistency of its reporting and improve the implementation of QC procedures in order to prevent such errors in subsequent annual submissions.

Feedstocks and non-energy use of fuels

28. In line with a recommendation made in the previous review report, Slovenia has provided information on the allocation of emissions associated with the non-energy use of diesel oil and natural gas, indicating that it subtracts the quantity of fuels used from the category manufacturing industries and construction in the energy sector in CRF table 1.A(d), and the amount of natural gas for chemical industry in accordance with the information for 2005–2012 in table 3.1.8 of the NIR. However, the ERT noted that Slovenia reports in CRF table 1.A(d) that associated CO_2 emissions are "NO" (not occurring) for some fuels where the fraction stored is 1.0, but reports where associated CO_2 emissions are reported for other fuels for which the fraction stored is also 1.0 per (coke oven gas, coke and petroleum coke). Also, liquefied petroleum gas (LPG) has been subtracted from energy for 2010, 2011 and 2012 only, but the Party reports "NA" (not applicable) for this fuel in CRF table 1.A(d) for these years. The ERT recommends that the Party continue to improve its reporting in CRF table 1.A(d) by removing these inconsistencies and ensuring transparency.

3. Key categories

Stationary combustion: liquid, solid and gaseous fuels – CO_2

29. The ERT noted that sub-bituminous coal is reported separately from lignite coal in table 1.1, annex 2, of the NIR for the period 1986–2012 and the net calorific value (NCV) of sub-bituminous coal is presented in table 3.2.8 of the NIR on an annual basis for the period 1995–2012. However, in CRF table 1.A(b) for the years 1986–1994 AD and NCVs of sub-bituminous coal have been reported as "NO". Therefore, the ERT recommends that Slovenia provide more explanation for the apparent inconsistency in reporting for this fuel for the period 1986–1994, or provide emission estimates for sub-bituminous coal.

30. The ERT identified certain instances where the values reported in the NIR (annex 2) did not match the AD reported in the CRF tables. For example, regarding liquid fuel consumption in public electricity and heat production in 1986, annex 2 reports a total of 3,747.74 TJ (estimated by the ERT, using fuel consumption as reported in annex 2 and NCVs, as follows: heavy oil - 76.71x39.74 plus light fuel oil - 11.625x41.82 plus diesel 5.36x39.74); while a value of 3,766.24 TJ is reported in CRF table 1.A(a). In response to a question raised by the ERT during the review, the Party stated that this difference was due to the incorrect reference to the quantity of diesel, which in fact is gasoline. In addition, the ERT found differences in the NCVs for liquid fuels reported in the CRF tables and the values reported in table 3.2.8 of the NIR for the years from 1986 to 2005. Therefore, the ERT recommends that Slovenia correct the identified inconsistencies and improve the consistency between the NIR and the CRF tables.

31. In the NIR, Slovenia stated that there are no planned improvements regarding the use of country-specific or plant-specific EFs to estimate CO_2 emissions from liquid fuels. Recognizing that this is not in accordance with the IPCC good practice guidance, since this is a key category, the ERT strongly reiterates the recommendation made in the previous review report that Slovenia develop country-specific CO_2 EFs for all fuels that have a

significant share in the fuel mix for each category, in order to improve the accuracy of the estimates.

32. The ERT noted that in the NIR (annex 2) Slovenia uses disaggregated AD for individual biomass fuels such as wood, landfill gas, sludge gas, biomass waste, other biomass. However, in CRF table 1.A(a)s only the biomass type is reported and in the NIR data on NCVs and EFs for these individual biomass types are not indicated. The ERT considers that this does not facilitate the replication of the estimates and, therefore, recommends that Slovenia provide more information for each specific fuel in order to enhance transparency.

33. The previous review report noted that, for agriculture under the subcategory agriculture/forestry/fisheries, Slovenia has been using the same coefficient for the estimation of fuel consumption (7.1 t/1000 hectares (ha), NIR table 3.2.51) for agricultural activities since 2000. This suggests that the likely technological variations in the use of and features of the machinery used for agricultural purposes in the country have not been taken into consideration. The ERT recommends that Slovenia update that coefficient in the next annual submission.

34. The ERT noted that Slovenia has provided additional information on CO_2 emissions for other industries in 2012 (NIR, page 69, table 3.2.34), by listing the industry types reported under other (manufacturing industries and construction). However, quantitative information on the distribution of CO_2 emissions for other industry types (i.e. cement production, lime production, glass production, ceramic production, other mineral), such as AD and CO_2 emission estimates, was not disaggregated as recommended by the previous review report. Therefore, the ERT reiterates the recommendation made in the previous review report that Slovenia provide disaggregated AD and CO_2 emission estimates according to the specific types of industry included under this subcategory to improve the transparency for the emission estimates for this important subcategory.

Road transportation: liquid fuels – CO_2

35. The previous review report noted that, for the physical and chemical properties of liquid fuels used for transportation purposes, Slovenia still partly uses default values from the COPERT IV model and partly uses values collected under national legislation. The ERT notes that Slovenia has plans to start collecting information on the physical and chemical properties of the gasoline and diesel used for road transportation. The ERT welcomes Slovenia's plans and recommends that Slovenia continue its progress to improve the characterization of the physical and chemical properties of gasoline and diesel fuel for road transportation and report on the results achieved.

Coal mining and handling: solid fuels – CH_4

36. The ERT noted that the Party did not follow the encouragement in the previous review report to provide information on the size and depth of abandoned/closed mines. The ERT reiterates the encouragement for Slovenia to report such information in its NIR in the next annual submission.

37. The review reports of 2012 and 2013 noted that, according to table 3.3.6 of the NIR, the estimates of CH_4 emissions from post-mining activities for 1986 and 1990 were between approximately three and six times higher than the estimates of CH_4 emissions from mining activities. For the other years of the time series the estimates of emission from post-mining activities amount to less than half of the estimates of emissions from mining activities. The current ERT notes that Slovenia has included text in the 2014 NIR which explains that this is due to a new extraction technique, resulting in more emissions being released during the mining process and less being released during post-mining activity. The

ERT commends Slovenia for explaining this change in the EF over time and for improving the transparency of the NIR.

4. Non-key categories

Oil and natural gas: gaseous fuels – CH_4

38. The ERT noted that Slovenia used the medium CH_4 EF from table 2.18 of the IPCC good practice guidance (0.2 per cent) to estimate fugitive CH_4 emission from gas production. However, the ERT noted that, in accordance with the information in the IPCC good practice guidance, the EFs in table 2.18 are indicative and only provided for the purposes of assessing the completeness, and for quality control. In response to a question raised by the ERT during the review, Slovenia stated that it had assumed that data from table 2.16 of the IPCC good practice guidance are not appropriate because they are for North America. The ERT explained to Slovenia that, in that case, the EFs given in the *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories* (hereinafter referred to as the Revised 1996 IPCC Guidelines) (Reference manual table 1-57, summary of CH_4 EFs, and table 1-58, revised regional EFs for CH_4 from oil and gas activities) should be used. During the review, Slovenia provided the ERT with estimates of emissions based on EFs from the Revised 1996 IPCC Guidelines, showing that the results using these EFs are lower than the emission estimates contained in the annual submission. Therefore, the ERT encourages Slovenia to develop country-specific CH_4 EFs for gas production activities.

39. The ERT noted that Slovenia stated that it used the CH_4 EF from an article from Germany[3] to estimate fugitive CH_4 emissions from gas transmission (1,284.0 m^3/km/year for 1986–1992). From 1993 onwards the EF was reduced by 10 per cent annually; and from 2009 onwards, the EF has been fixed at 223.0 m^3/km/year, as reported in table 3.3.13 of the NIR. However, the ERT noted that Slovenia has used the EF from East Germany for gas distribution during the period 1986–1992 and reduced this annually by 10 per cent in the period 1993–2011, as indicated in table 3.3.19 of the NIR. The Party justified the use of an EF from Germany with the fact that Slovenia and East Germany experienced similar economic and technological conditions before 1990. Further, in response to a question raised by the ERT during the review, Slovenia explained that, as presented in the NIR (page 121), the verification of emissions from production and transmission was performed, and the result was that the total of fugitive emissions reported in the inventory is similar to emission estimates calculated using the lowest range of the default EFs from the *2006 IPCC Guidelines for National Greenhouse Gas Inventories* (hereinafter referred to as the 2006 IPCC Guidelines). Slovenia further explained that, because the Slovenian pipeline network is very new, a comparison using the lowest EFs was reasonable. For the next annual submissions, the ERT encourages Slovenia to develop country-specific CH_4 EFs for the gas transmission activity to estimate emissions from this subcategory and elaborate on the basis for the annual 10 per cent reduction in the EF between 1993 and 2009.

C. Industrial processes and solvent and other product use

1. Sector overview

40. In 2012, emissions from the industrial processes sector amounted to 1,013.58 Gg CO_2 eq, or 5.4 per cent of total GHG emissions, and emissions from the solvent and other

[3] Reichert J and Schoen M. *Methanemissionen durch den Einsatz von Gas in Deutchland von 1990 bis 1997 mit einem Ausblick auf 2010*. Available at <http://publica.fraunhofer.de/eprints/urn_nbn_de_0011-n-36320.pdf>.

product use sector amounted to 60.76 Gg CO_2 eq, or 0.3 per cent of total GHG emissions. Since the base year, emissions have decreased by 14.2 per cent in the industrial processes sector, and decreased by 25.8 per cent in the solvent and other product use sector. The key drivers for the fall in emissions in the industrial processes sector are the technological changes (closure of old horizontal Stud Soderberg and prebaked anode type plants in 1991 and 2007, respectively) implemented in the only aluminium production plant in Slovenia, and the global economic crisis after 2008 that induced lower industrial activity. Within the industrial processes sector, 56.5 per cent of the emissions were from mineral products, followed by 23.3 per cent from consumption of halocarbons and SF_6 and 20.1 per cent from metal production. The remaining 0.1 per cent were from chemical industry.

41. Slovenia has made recalculations between the 2013 and 2014 annual submissions for the industrial processes sector. The two most significant recalculations made by Slovenia between the 2013 and 2014 annual submissions were in the following subcategories: aluminium production and the consumption of halocarbons and SF_6 (usage of HFCs in refrigeration equipment). The recalculation of the CO_2 emissions for aluminium production was made as a result of the acquisition of new data for 2011 on the composition of the baked anodes. The recalculation of the HFC emissions from refrigeration equipment was due to changes of AD as a result of the inclusion of the disposals of refrigeration equipment in the model that Slovenia uses to calculate HFC emissions from refrigeration and air-conditioning equipment. Compared with the 2013 inventory submission, the recalculations decreased the emissions in the industrial processes sector for 2011 by 0.03 Gg CO_2 eq (0.003 per cent), and decreased the total national emissions by 0.0002 per cent. The ERT noted that the total amount of the GHG emissions for the industrial processes sector remained almost unchanged, although there were recalculations that increased some categories and decreased other categories. The recalculations were adequately explained in the NIR.

42. Slovenia includes a description of the category-specific QA/QC activities for most of the key categories in the industrial processes sector. However, the ERT noted that Slovenia did not include in the NIR any category-specific information on QA/QC procedures for lime production. In response to a question raised by the ERT during the review on this issue, Slovenia clarified that, because of the small number of installations in the country and the close collaboration of the inventory team with the European Union Emission Trading System (EU ETS) team, Slovenia performs regular verification of the data. The ERT recommends that Slovenia include a separate chapter in the NIR for category-specific QA/QC for this key category.

2. Key categories

Limestone and dolomite use – CO_2

43. Slovenia has reported CO_2 emissions from limestone and dolomite use in the production of bricks and ceramics for the period 2005–2012. CO_2 emissions for this period were calculated by applying the default CO_2 EF for limestone of 440 kg CO_2/tonne limestone from the Revised 1996 IPCC Guidelines (page. 2.10) and an CO_2 EF for usage of magnesium carbonate of 522 kg CO_2/tonne magnesium carbonate; the AD were obtained from the verified EU ETS reports. The ERT noted that no emissions were reported from bricks and ceramics production for the period 1986–2004. In response to a question raised by the ERT during the review as to whether emissions from limestone and dolomite use in bricks and ceramic production occurred prior to 2004, Slovenia replied that these emissions were not estimated because of lack of data. The ERT recommends that Slovenia make efforts to obtain AD and estimate the emissions from bricks and ceramics production in order to ensure a complete and consistent time series in the next annual submission.

Consumption of halocarbons and SF_6 – HFCs and SF_6

44. Slovenia reported HFC emissions from domestic refrigeration by including the emissions from manufacturing, operations and disposal of the equipment. On page 152 of the NIR Slovenia explains that no emissions from disposal have been calculated. However, the ERT noted that emissions from disposal have been reported for the year 2012 in the CRF tables. In response to a request by the ERT during the review for Slovenia to recheck this inconsistency between the NIR and the CRF, the Party responded that despite the fact they have strengthened their QC procedures some of the text in the NIR has not been updated in accordance with the new calculations in the CRF tables. The ERT recommends that Slovenia update the information in the NIR in order to reflect the inclusion of HFC emissions from refrigeration equipment disposal and to continue to strengthen its QC procedures to avoid such inconsistencies.

45. Slovenia assumed 20 years to be the product lifetime of domestic refrigeration and air-conditioning equipment, and 15 years for commercial and industrial refrigeration. The ERT considers that this is not in accordance with table 3.22 of the IPCC good practice guidance because the used values exceed the default value ranges for the product lifetime, which are 12–15 years for domestic refrigeration, 7–10 years for commercial refrigeration and 10–15 years for residential and commercial air-conditioning equipment. The ERT considers that usage of the higher value for the product lifetime implies that no emissions from disposal for 2012 were reported for the following categories: industrial refrigeration and stationary air-conditioning equipment and lower emissions than expected were reported for domestic refrigeration. The ERT also observed that Slovenia is considered to be a developed country; therefore it should choose the lower range of the proposed default value range in accordance with the IPCC good practice guidance. In response to a question raised by the ERT during the review regarding the justification of the used product lifetime value, the Party responded that, despite the fact that Slovenia is considered to be developed country, the effect of the global economic crisis slowed down the economic activity in the country, therefore it is unlikely that the refrigeration and air-conditioning equipment was replaced. The ERT recommends that Slovenia include justification in the NIR for the use of these country-specific values.

46. In the NIR (page 156), Slovenia reported that there were no SF_6 emissions from disposal of electrical equipment in the period 1986–2012. However, the ERT noted that SF_6 emissions from disposal have been reported in the CRF tables, but only for 2012. In response to a question raised by the ERT during the review, regarding whether Slovenia has accounted for the emissions from the disposal of electrical equipment, the Party replied that disposed amounts of SF_6 have been identified only for 2012 and confirmed that an error had been made in the NIR. Data on the amount of SF_6 captured from disposed electrical equipment were obtained from the authorized service company and the SF_6 emissions were calculated by multiplying the equipment capacity written on the nameplate by 70 per cent, which is the recommended value in the Revised 1996 IPCC Guidelines (page 2.63) for the quantity remaining in the equipment at the end of its lifespan. The ERT recommends that Slovenia update the information in the NIR and strengthen the QC process for monitoring the conformity of the NIR and the CRF tables. Furthermore, the ERT recommends that Slovenia include information regarding the methodology used for the calculation of the SF_6 emissions from the disposed electrical equipment in the NIR of the next annual inventory submissions in order to improve the transparency of its reporting.

3. Non-key categories

Nitric acid production – N_2O

47. Slovenia estimated N_2O emissions from nitric acid production for the period 1997–2005 by applying an N_2O EF of 5.5 kg N_2O/tonne nitric acid to the production data

derived by SORS. The ERT noted that Slovenia did not justify the choice of this EF in the NIR. In response to a request by the ERT during the review, regarding its choice of EF, the Party responded that, because of a lack of knowledge about the production technology in the one industrial plant it decided to use the medium-range EF value for the USA in the Revised 1996 IPCC Guidelines (page 2.18, table 2-7). The ERT concluded that the EF may diverge from the default as a result of the production technology and operating conditions. Therefore, to improve the accuracy of the emission estimates for this category, the ERT encourages Slovenia to investigate the production technology and operating conditions of the single industrial plant that was operating in the period 1997–2005 and, if necessary, to adjust the EF accordingly in order to improve the accuracy of the emission estimates. Furthermore, the ERT recommends that Slovenia improve the transparency of its NIR by providing the justification for the choice of EF.

D. Agriculture

1. Sector overview

48. In 2012, emissions from the agriculture sector amounted to 1,871.26 Gg CO_2 eq, or 9.9 per cent of total GHG emissions. Since 1986, emissions have decreased by 15.4 per cent. The key drivers for the fall in emissions are the decline in the population of dairy cattle and swine. Within the sector, 37.1 per cent of the emissions were from agricultural soils, followed by 34.7 per cent from enteric fermentation. Manure management accounted for 28.2 per cent. Rice cultivation, prescribed burning of savannahs, field burning of agricultural residues and other (agriculture) were reported as "NO".

49. Slovenia has made recalculations between the 2013 and 2014 annual submissions for this sector. The two most significant recalculations made by Slovenia between the 2013 and 2014 annual submissions were in the following categories: enteric fermentation and agricultural soils. The recalculations were made because of updated AD on the population of horses in 2010 and 2011. Compared with the 2013 annual submission, the recalculations increased the emissions in the agriculture sector by 2.03 Gg CO_2 eq (0.1 per cent), and increased total national emissions by 0.01 per cent in 2011. Explanations of the recalculations were provided in the NIR and in CRF table 8(b).

2. Key categories

Enteric fermentation – CH_4

50. Slovenia has used a tier 2 method to estimate CH_4 emissions from enteric fermentation of dairy and non-dairy cattle and tier 1 for the other livestock animals. Slovenia has provided additional information on the parameters used in the estimates in annex 3 of the NIR. However, the ERT noted that this information is not sufficient to ensure transparency and recommends that Slovenia improve the transparency of its reporting by including additional information (i.e. weight and daily weight gain of each category of non-dairy cattle) in its NIR.

Manure management – CH_4 and N_2O

51. Slovenia has developed a country-specific matrix on animal waste management systems (AWMSs) for dairy and non-dairy cattle, and swine. In accordance with explanations in the NIR, the ERT concluded that the AWMS matrix for dairy and non-dairy cattle developed in the inventory is based on farm structure and size, using expert judgement. Generally, small cattle farms are expected to use mainly solid manure storage systems and large cattle farms use mainly liquid manure storage systems. Data collected in agricultural surveys completed by SORS for 1991, 2000, 2003, 2005 and 2007 were used as a basis for the development of the AWMS matrix; and the inter-annual changes were

interpolated and extrapolated for the reporting years after 2007. The most recent round of the survey organized by SORS took place in 2010, and the survey results on usage of AWMS differed markedly from the AWMS matrix reported for cattle livestock. However, the results have not yet been applied in the development of the AWMS matrix. The ERT reiterates the recommendation made in the previous review report that Slovenia make all efforts to include the latest information obtained by SORS on manure management systems applied on cattle farms. In addition, the ERT recommends that the Party also take into consideration housing technology types (e.g. loose housing or tie stall housing) used in cattle farms when developing/updating the AWMS matrix.

52. The AWMS matrix for swine is based on data on farm size and type of ownership collected by SORS in 1991, 2000, 2003, 2005 and 2007; data for other years were interpolated and extrapolated. The matrix is presented in the annex of the NIR. In response to a question raised during the review, Slovenia clarified that in recent years organic farming has been established on several swine farms. The ERT recommends that Slovenia conduct an investigation and update the AWMS matrix for swine, because the practice of organic farming may include deep litter manure management systems or pasture and paddock.

53. In response to a question raised by the ERT during the review, Slovenia informed the ERT that the eleven biogas plants existing in the country produced biogas from livestock manure in 2010, and 0.4 per cent and 13.1 per cent of cattle and pig manure, respectively, were treated in biogas fermenters. The ERT encourages Slovenia to improve the transparency of its reporting by providing detailed information on the amount of manure treated in anaerobic digesters for each animal type.

54. The ERT noted that Slovenia reported in CRF table 4.B(b) average nitrogen (N) excretion (Nex) rates for swine at the value of 12.2 kg N/head/year, which is lower than the default for developed countries (20 kg N/head/year for Europe from the Revised 1996 Guidelines, table 4.20). In response to a question raised by the ERT during the review, Slovenia provided a calculation sheet indicating how the average country-specific Nex rates for swine were obtained, and the ERT concluded that the calculations do not result in an underestimation of emissions. The ERT reiterates the recommendations made in the previous review report that Slovenia improve the transparency and provide a description of the development of the average Nex rate for swine.

3. Non-key categories

Field burning of agriculture residues – N_2O

55. The ERT noted that Slovenia uses the notation key "NA" in CRF table 4.F to report crop production for the entire period, but according to data presented in the Food and Agriculture Organization (FAO) dataset crops have been produced throughout the whole reporting period.[3] In response to a question raised by the ERT during the review, Slovenia indicated that the notation key "NA" had been used instead of data on crop production because prescribed burning of crop residues does not occur in Slovenia. The ERT encourages Slovenia to improve the transparency of its reporting by including data on the amounts of crops produced, because that information is also used to estimate N_2O emissions from N-fixing crops and crop residues left on fields.

[3] Available at <http://data.fao.org/datasets>.

E. Land use, land-use change and forestry

1. Sector overview

56. In 2012, net removals from the LULUCF sector amounted to 4,355.77 Gg CO_2 eq. Since 1986, net removals have increased by 185.5 per cent. The key driver for the rise in removals is the increasing growing stock of forest land, the only land category acting as a sink in Slovenia. Within the sector, net removals of 6,732.25 Gg CO_2 eq were from forest land. Net emissions were reported from grassland (965.53 Gg CO_2 eq), settlements (700.59 Gg CO_2 eq), cropland (481.87 Gg CO_2 eq) and other land (172.28 Gg CO_2 eq). The remaining net emissions of 56.21 Gg CO_2 eq were from wetlands.

57. Slovenia has made recalculations between the 2013 and 2014 annual submissions for this sector. The recalculations covered all land-use categories following changes in data (e.g. land area, growing stock, organic soil) and methods in response to the 2013 annual review report. Compared with the 2013 annual submission, the recalculations decreased net removals in the LULUCF sector by 5,219.77 Gg CO_2 eq (54.3 per cent). The recalculations were adequately explained in the NIR.

58. The information reported by Slovenia in the NIR and the responses provided to questions during the review were considered by the ERT to be transparent enough to understand how carbon stock changes, emissions and removals were calculated. Slovenia used the notation "NE" (not estimated) for the following non-mandatory categories/pools: carbon stock changes for all carbon pools from wetlands remaining wetlands; CH_4 and N_2O emissions from peatlands in wetlands (drainage of soils and wetlands) and from settlements remaining settlements and land converted to settlements; and CO_2, N_2O and CH_4 emissions from harvest wood products (other (LULUCF)). The ERT encourages the Party to estimate and report emissions from all non-mandatory categories.

59. The ERT commends Slovenia for its efforts to address the majority of the recommendations from the previous review report for the LULUCF sector. However, the accuracy of some basic data needs to be improved. For example, Slovenia used approach 3 of the IPCC *Good Practice Guidance for Land Use, Land-Use Change and Forestry* (hereinafter referred to as the IPCC good practice guidance for LULUCF) to derive data on land area using raster data for the years 2002 and 2012 and to develop the land-use change matrices. However, when comparing the data on deforestation from the matrices with data on land areas for deforestation collected from observations by the Slovenian Forest Service (SFS), the ERT identified that the data for land areas in the matrices were overestimated. This finding was acknowledged by Slovenia, which had reported in the NIR that the land areas for deforestation in the matrices were up to seven times higher than that observed.

60. This finding raised serious concerns regarding the overall approach used by Slovenia to derive land areas and to develop the land-use change matrices, which are important prerequisites for the estimation of emissions and removals in the LULUCF sector. The ERT believes that improving the land-use change matrices is an area where Slovenia should put a lot of effort in future. The ERT was concerned about how this data quality issue would affect the reporting of emissions and removals related to activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol (KP-LULUCF activities). However, the ERT noted that for the reporting under the Kyoto Protocol, Slovenia used a different approach to detect deforestation and forest management, based on data from observations collected by SFS (see para. 87 below). The ERT therefore reiterates the recommendation made in the previous review report that Slovenia improve the land representation data used to report LULUCF emissions and removals under the Convention by reconciling all data on areas contained in its databases, land-use maps, as well as data collected from observations.

2. Key categories

Forest land remaining forest land – CO_2

61. Slovenia applied the stock change method from the IPCC good practice guidance for LULUCF together with a combination of some country-specific data (e.g. merchantable volume, basic wood density) and default parameters (e.g. biomass expansion factors, basic wood density, root-to-shoot ratio and carbon fraction) to estimate the changes in carbon stock in living biomass. The merchantable volume data were available from the national forest inventories (NFIs) conducted in the years 1995, 2000, 2007 and 2012. To generate the missing data on merchantable volume for the time series 1986–2012, Slovenia applied an interpolation and extrapolation approach. However, the ERT noted that applying interpolation/extrapolation on long periods (up to nine years) is not in line with the IPCC good practice guidance. During the review, in response to a question raised by the ERT, Slovenia acknowledged that, although there was no systematic NFI for the years before 1995, there were some data in the forest management plans of SFS. The ERT recommends that Slovenia collect additional data on merchantable volume in order to improve its estimates using interpolation/extrapolation. In response to a question raised by the ERT during the review, Slovenia attributed the large inter-annual increase in removals between 1999 and 2000 (137.4 per cent) to the use of the interpolation of growing stocks. However, the inter-annual variation of growing stock is small compared with that of removals (0.8 per cent, NIR, table 7.3.3). The ERT recommends that Slovenia provide explanations to support the claim that the interpolation/extrapolation methods are in accordance with the IPCC good practice guidance. In addition, because Slovenia applied the stock change method, the ERT notes that the notation key "IE" (included elsewhere) should be used to report "losses" in CRF table 5.A instead of "NA". The ERT recommends that Slovenia use the notation key "IE" in CRF table 5.A instead of "NA".

62. In response to a question raised by the ERT during the review, Slovenia explained that it classified some lands with young forests (less than 20 years old) under forest land remaining forest land, whereas the ERT noted that these lands should be classified as land converted to forest land, in line with the IPCC good practice guidance for LULUCF. The ERT recommends that Slovenia further investigate this issue and improve the land classification by subtracting young forest (less than 20 years old) and classify this as land converted to forest land.

63. The carbon stock changes in the dead wood pool were estimated using the stock change method from the IPCC good practice guidance for LULUCF. Slovenia has data on dead wood stocks collected, from observations, by the Forest and Forest Ecosystem Condition Survey (FECS) for the years 2007 and 2012 only. Slovenia applied an extrapolation to fill the data gap from 2007 backwards. The ERT recommends that Slovenia search for additional data for some of the years prior to and after 2007 in order to improve the estimates based on interpolation/extrapolation. In addition, the ERT noted that Slovenia applied the tier 1 default assumption from the IPCC good practice guidance for LULUCF for other pools (i.e. that there is no change in carbon stock in the litter and the soil pools). In response to a question raised by the ERT during the review, Slovenia provided data (based on measurements and model simulation) justifying that the choice of this assumption is in line with the IPCC good practice guidance for LULUCF.

Land converted to forest land – CO_2

64. Slovenia reported in the NIR that land conversion to forest land occurs only through natural regeneration and that no biomass removals from human intervention take place. Given that no removals from land converted to forest land occur, Slovenia applied the gain–loss method from the IPCC good practice guidance for LULUCF, and estimated only the increase in carbon stock in living biomass. Slovenia used country-specific data (e.g.

average annual net increment, wood density) and IPCC default data (e.g. biomass expansion factor, root-to-shoot ratio, carbon fraction). The ERT concludes that the estimates are in accordance with the IPCC good practice guidance for LULUCF.

65. The carbon stock changes in the dead organic matter pool (corresponding with the dead wood and litter pools for KP-LULUCF activities) were reported as "NO", based on the tier 1 default assumption from the IPCC good practice guidance for LULUCF. The carbon stock changes in mineral soil were estimated by applying the method from the IPCC good practice guidance for LULUCF and country-specific data on soil organic carbon, considering that all lands converted to forest land are extensively managed. The ERT commends Slovenia for this.

Cropland remaining cropland – CO_2

66. Slovenia distinguishes annual cropland remaining annual cropland, perennial cropland remaining perennial cropland and conversions between annual and perennial croplands. In response to the recommendations formulated in the previous review report, Slovenia revised the chapter of the NIR on cropland remaining cropland by improving the land area of organic soils using data from pedology maps.

67. The ERT commends Slovenia for having reported carbon stock changes in mineral soils, organic soils and CO_2 emissions from liming for this category. Slovenia assumed that changes in carbon stocks in living biomass in annual cropland remaining annual cropland are "NO" but reported changes in carbon stocks in biomass for annual cropland converted to perennial cropland using the method from the IPCC good practice guidance for LULUCF for land converted to cropland. In response to a question raised by the ERT during the review, Slovenia clarified that carbon stock changes in living biomass for perennial cropland remaining perennial cropland were reported as "NA" owing to a lack of data on land area. The ERT recommends that Slovenia collect data on land area in perennial cropland and estimate emissions and removals in order to enhance the completeness of the inventory.

Land converted to cropland – CO_2

68. Slovenia reported all carbon pools (living biomass, dead organic matter and mineral and organic soils) using the default methods from the IPCC good practice guidance for LULUCF. The ERT noted that some basic parameters used were default parameters. Given that this is a key category, the ERT recommends that Slovenia determine and use country-specific parameters such as the changes in carbon stocks from one year of cropland growth for perennial and annual croplands in line with the IPCC good practice guidance for LULUCF.

Land converted to grassland – CO_2

69. The ERT acknowledges the efforts made by Slovenia to report all carbon pools. However, the ERT recommends that Slovenia determine and use country-specific data on changes in carbon stocks from one year of grassland growth as this category is a key category.

3. Non-key categories

N_2O emissions from disturbance associated with land-use conversion to cropland – N_2O

70. Following the recommendation made in the previous review report, Slovenia reported N_2O emissions from disturbance associated with land-use conversion to cropland. Slovenia used the method from the IPCC good practice guidance for LULUCF and a default EF. However, the ERT noted that the carbon/nitrogen (C/N) ratio used was also default, despite the encouragement from the previous review report that the Party include

the updated information on the C:N ratio being revised by Slovenia. The ERT reiterates the encouragement made in the previous review report for Slovenia to provide and use updated information on the C:N ratio.

Biomass burning – CH_4 and N_2O

71. To estimate CH_4 and N_2O emissions from wildfires, Slovenia has implemented the recommendation made in the previous review report, using country-specific data on "mass of available fuel" derived from the growing stock of forest from the region where the wildfires occur. The ERT commends Slovenia for this achievement. Although data on burned area exist and are used, the ERT recommends that Slovenia collect additional data on growing stock in order to limit the application of interpolation/extrapolation over a long period (see para. 61 above).

F. Waste

1. Sector overview

72. In 2012, emissions from the waste sector amounted to 488.34 Gg CO_2 eq, or 2.6 per cent of total GHG emissions. Since 1986, emissions have decreased by 1.3 per cent. The key driver for the fall in emissions is a decrease in the biogradable part of municipal waste deposited on solid waste disposal sites (SWDS). Within the sector, 73.5 per cent of the emissions were from solid waste disposal on land, followed by 25.4 per cent from wastewater handling. The remaining 1.1 per cent of emissions were from waste incineration.

73. Slovenia has made recalculations between the 2013 and 2014 annual submissions for this sector. The only recalculation made by Slovenia between the 2013 and 2014 annual submissions was in the wastewater handling category. The recalculation was made following changes in AD. Compared with the 2013 annual submission, the recalculation decreased emissions in the waste sector by 56.26 Gg CO_2 eq (29.5 per cent) for 2011, and decreased total national emissions by 0.3 per cent.

74. In line with the previous review report, the ERT considers that the sector overview presented in the NIR contains insufficient information about the data sources for waste allocation, the overall situation with waste treatment and the assumptions applied when choosing country-specific values for parameters. For example, there is insufficient information on the methodology used to estimate emissions from waste incineration. The ERT reiterates the recommendation made in the previous review report that Slovenia enhance the transparency of the sector overview.

2. Key categories

Solid waste disposal on land – CH_4

75. Slovenia calculated CH_4 emissions from solid waste disposal on land using the first-order decay model and the tier 2 methodology in the IPCC good practice guidance. The Party applies a combination of IPCC default values and country-specific AD. The ERT noted that Slovenia used AD for municipal solid waste (MSW) disposal from different data sources for three time periods in the NIR (i.e. the periods 1964–1994, 1995–2000 and 2001–2012). MSW for the first period (1964–1994) was calculated based on population data and waste generation rate; for the second period (1995–2000) it was based on actual data on waste disposal amount from SORS; and for the third period (2001–2012) it was based on actual data on waste disposal amount from the Slovenian Environment Agency. The ERT recommends that Slovenia ensure that the use of multiple sources of data for

MSW disposal for different periods is in accordance with chapter 7 of the IPCC good practice guidance.

76. The ERT noted that a methane correction factor (MCF) of 1.0 was used to estimate emissions from sludge in domestic and commercial wastewater disposed in SWDS. However, Slovenia reported an average MCF value of 0.1 for sludge handling for industrial wastewater, since it is estimated that about 10 per cent of sludge from industrial wastewater is disposed in SWDS, while the other 90 per cent is exported, incinerated or composted. The ERT noted that Slovenia is not following the definition of MCF provided in the IPCC good practice guidance. The ERT recommends that Slovenia review the method used to derive the MCF values and use the correct definition of MCF, taking into consideration the fraction of waste that decomposes aerobically.

77. Slovenia estimated the fraction of degradable waste and degradable organic carbon (DOC) values on the basis of screening analyses (country-specific data). However, there is a lack of information in the NIR on the screening analyses (i.e. it is not clear regarding the correlation between table 8.I.6 – fractions of degradable waste and table 8.I.7 – results for screening analyses for mixed MSW). In response to a question raised by the ERT during the review week, Slovenia explained that the screening analyses were made only for mixed MSW (table 8.I.7), and that for all other biodegradable types of waste the composition was determined according to table 8.I.8. The ERT concluded that the methodology and the selection of parameters are in accordance with the IPCC good practice guidance but recommends that Slovenia include more information on the context of the results of the screening analyses in the NIR.

Wastewater handling – CH_4

78. Slovenia uses the IPCC default methodology to estimate CH_4 emissions from domestic and commercial wastewater and industrial wastewater using both IPCC defaults and country-specific parameters. Following a recommendation made in the previous review report, the Party has improved the transparency of the reporting by including AD on domestic and commercial wastewater in the NIR. The ERT welcomes the efforts made by Slovenia to implement this recommendation.

79. According to the NIR, CH_4 emissions from domestic and commercial wastewater treatment were recalculated for the period 1986–2011. Recalculations were performed because of new data on the number of inhabitants connected to various types of domestic wastewater treatment. However, the ERT could not find in the NIR sufficient information about the reallocation of the types of treatment and on the reason for the decrease in emissions, compared with the last annual submission, from 2006 onwards. In response to a question raised by the ERT during the review, Slovenia explained that it has obtained updated data on the number of inhabitants connected to primary, secondary and tertiary treatment and inhabitants who use septic tanks, collected by the Statistical Office of the Slovenian Environment Agency. The Party also explained that the decrease of CH_4 emissions from 2006 onwards was due to updated data for the share of sludge in domestic and commercial wastewater treatment. The ERT agrees with the explanations and recommends that Slovenia improve the transparency of its reporting by including clear explanations about the recalculations performed.

80. The ERT noted that Slovenia indicates in the NIR (page 268) that it assumes a value of 0.05 for methane conversion factor for secondarily treated wastewater and a value of 0.8 for sludge treatment in order to estimate CH_4 emissions from domestic and commercial wastewater treatment. Furthermore, Slovenia assumed an methane conversion factor of 0.03 in calculating CH_4 emissions from industrial wastewater. The previous review report recommended that Slovenia included this information in the NIR. The ERT recommends

that Slovenia ensure that sufficient transparent explanations are provided, in the NIR, of the assumptions made in deriving country-specific values for parameters.

3. Non-key categories

Waste incineration – CO_2 and N_2O

81. Slovenia reported emissions from waste incineration, including emissions from biogenic waste, municipal solid waste, hazardous waste and clinical waste, in accordance with the IPCC good practice guidance methodology.

82. In response to a question raised by the ERT during the review regarding information on the amount of sewage sludge applied to agricultural soils, Slovenia provided a table containing all data on sewage sludge, including the sewage sludge incinerated.

83. The ERT also noted that there is no information about the incineration of sewage sludge in the waste sector of the NIR. In response to a question raised by the ERT during the review on whether any of these emissions were included in the waste sector, Slovenia explained that there is only one plant that incinerates sewage sludge and that it has a recovery system which is used for energy purposes, so the emissions from incineration of sewage sludge were included in the energy sector under the category public electricity and heat production. The ERT recommends that Slovenia include this information in the NIR to improve the transparency of its reporting.

G. Supplementary information required under Article 7, paragraph 1, of the Kyoto Protocol

1. Information on activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol

Overview

84. Table 6 provides an overview of the information reported and parameters selected by Slovenia under Article 3, paragraphs 3 and 4, of the Kyoto Protocol.

Table 6
Supplementary information reported under Article 3, paragraphs 3 and 4, of the Kyoto Protocol

Issue	*Expert review team assessment, if applicable*	*Findings and recommendations*
Assessment of the Party's reporting in accordance with the requirements in paragraphs 5–9 of the annex to decision 15/CMP.1	Sufficient	
Activities elected under Article 3, paragraph 4, of the Kyoto Protocol	Forest management Years reported: 2008, 2009, 2010, 2011, 2012	
Period of accounting		Commitment period accounting

Issue	*Expert review team assessment, if applicable*	*Findings and recommendations*
Party's ability to identify areas of land and areas of land-use change in accordance with paragraph 20 of the annex to decision 16/CMP.1	Sufficient	Slovenia applied reporting method 1of the IPCC good practice guidance for LULUCF to identify land areas for activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol. Slovenia provided this information in the NIR in response to a recommendation from the previous review report

Abbreviations: ERT = expert review team, IPCC = Intergovernmental Panel on Climate Change, IPCC good practice guidance for LULUCF = IPCC *Good Practice Guidance for Land Use, Land-Use Change and Forestry*, NIR = national inventory report.

85. Chapter G.1 includes the ERT's assessment of the 2014 annual submission against the Article 8 review guidelines and decisions 15/CMP.1 and 16/CMP.1. In accordance with decision 6/CMP.9, Parties will begin reporting of KP-LULUCF activities in the submissions due by 15 April 2015 using revised CRF tables, as contained in the annex to decision 6/CMP.9. Owing to this change in the CRF tables for KP-LULUCF activities, and the change from the first commitment period to the second commitment period, paragraphs 86–91 below contain the ERT's assessment of the Party's adherence to the current reporting guidelines and do not provide specific recommendations for reporting these activities in the 2015 annual submission.

Activities under Article 3, paragraph 3, of the Kyoto Protocol

Afforestation and reforestation – CO_2

86. Slovenia has reported afforestation and reforestation activities as "NO" because all land conversion to forest land occurs through the process of natural regeneration of agricultural lands in Slovenia and this process is not considered to be directly human-induced. Agricultural land that has been abandoned for more than 20 years, and which satisfies a specific forest definition, is defined as forest and is included in the area of forest management. The ERT considers that the approach taken by Slovenia is in line with the accounting and reporting rules set out in the relevant decisions of the Conference of Parties serving as the meeting of the Parties to the Kyoto Protocol (CMP) and the IPCC good practice guidance for LULUCF.

Deforestation – CO_2 and N_2O

87. Slovenia has used the same definition of deforestation for reporting under the Convention and the Kyoto Protocol, but the approaches and data used to detect deforestation for the reporting under the Convention and the Kyoto Protocol were not the same (see para. 60 above). The application of the environmental legislation is used by SFS to identify deforestation and document areas converted from forest land in the forestry spatial information system and annual reports on forests. The ERT noted that these data from SFS are considered more accurate for the reporting under the Kyoto Protocol than the data in the land-use change matrix used for reporting under the Convention. Slovenia reported that deforestation occurs through a wide range of activities (e.g. urbanization, agriculture, mining, power industries), but owing to a lack of data on each final use of land after deforestation, deforestation has been categorized into two broad subcategories of final use: agriculture and settlements. For the estimation of carbon stock changes in carbon pools, Slovenia used the same methods applied for the reporting under the Convention. In response to a question raised by the ERT during the review, Slovenia provided data on deforested land areas in the time series 2008–2012 that justify the large inter-annual decrease in CO_2 net emissions between 2010 and 2012 (35.0 per cent). The ERT

recommends that Slovenia include this information and provide further explanation on emission trends in future annual submissions in order to enhance the transparency of reporting.

88. N_2O emissions from disturbance associated with forest land conversion to cropland are estimated and reported in the 2014 submission in response to a recommendation formulated in the previous review report. The method used was in line with the IPCC good practice guidance for LULUCF and it is similar to the one used to report under the LULUCF sector.

89. Slovenia continues to report carbon emissions from lime application under deforestation as "NO". In response to a recommendation made in the previous review report, Slovenia explained in the 2014 annual submission that lime application is not a practice used when conversions from forest land to cropland or to other land uses occur in Slovenia. The ERT noted that the use of "NO" is appropriate in this condition.

Activities under Article 3, paragraph 4, of the Kyoto Protocol

Forest management – CO_2, CH_4, N_2O

90. Slovenia reported that all forests in the country are managed, as there are management plans prepared for all forests. Data on land area under forest management were derived from annual reports on forests provided by SFS. Forest land is determined by the projection of appropriate photographs acquired by remote sensing techniques onto basic topographic maps and verified with ground-truth observations. According to the Forest Act of 2007 all agricultural land that was abandoned is included in forest land. The previous review report indicated that the land area reported under forest management was identical to that reported for forest land remaining forest land, meaning that the land area for forest management was underestimated. Following the recommendation made in the previous review report, Slovenia corrected this potential problem using actual data collected by the SFS.

91. The changes in carbon stocks in living biomass and dead wood were estimated in a similar manner to those for the LULUCF sector (see paras. 61–63 above). For litter and soil, Slovenia used the IPCC tier 1 assumption that there were no changes in carbon stock in these pools and reported them as not reported ("NR") in the summary table NIR 1. Slovenia provided verifiable data from measurements and a model simulation to support the statement that litter and soil are not net sources of emissions, but the ERT noted that these estimations were provided without uncertainty data. The ERT noted that, depending on the uncertainty range, the difference between observations at two points in time could result in net emissions contradicting the assumption that these pools are not net sources of emissions. In response to a question raised by the ERT during the review, Slovenia demonstrated that there was no significant difference between the two measurements, thereby complementing the verifiable information supporting that the litter and soil pool are not net sources of emissions, as required by paragraph 6(c) of the annex to decision 15/CMP.1.

2. Information on Kyoto Protocol units

Standard electronic format and reports from the national registry

92. Slovenia has reported information on its accounting of Kyoto Protocol units in the required SEF tables, as required by decisions 15/CMP.1 and 14/CMP.1. The ERT took note of the findings included in the standard independent assessment report (SIAR) on the SEF

tables and the SEF comparison report.[7] The SIAR was forwarded to the ERT prior to the review, pursuant to decision 16/CP.10. The ERT reiterated the main findings contained in the SIAR.

93. Information on the accounting of Kyoto Protocol units has been prepared and reported in accordance with decision 15/CMP.1, annex, chapter I.E, and reported in accordance with decision 14/CMP.1 using the SEF tables. This information is consistent with that contained in the national registry and with the records of the international transaction log (ITL) and the clean development mechanism registry and meets the requirements referred to in decision 22/CMP.1, annex, paragraph 88(a–j). The transactions of Kyoto Protocol units initiated by the national registry are in accordance with the requirements of the annex to decision 5/CMP.1 and the annex to decision 13/CMP.1. No discrepancy has been identified by the ITL and no non-replacement has occurred. The national registry has adequate procedures in place to minimize discrepancies.

94. The ERT notes that the three recommendations from the SIAR report 2013 were all addressed. It contained recommendations on the improvement of the public availability of the register information, on the provision of additional information on the database structure in the NIR and on testing each release by the Party. There were no additional recommendations in the SIAR report 2014.

Accounting of activities under Article 3, paragraph 3, of the Kyoto Protocol and any elected activities under Article 3, paragraph 4, of the Kyoto Protocol

95. Slovenia has reported information on its accounting of KP-LULUCF in the accounting table, as included in the annex to decision 6/CMP.3. Information on the accounting of KP-LULUCF has been prepared and reported in accordance with decisions 16/CMP.1 and 6/CMP.3.

96. Table 7 shows the accounting quantities for KP-LULUCF as reported by the Party and the final values after the review.

Table 7

Accounting quantities for activities under Article 3, paragraph 3, and, if any, activities under Article 3, paragraph 4, of the Kyoto Protocol, in t CO_2 eq

	2014 annual submission[a]		
	As reported	*Revised estimates*	*Final accounting quantity*[b]
Afforestation and reforestation			
Non-harvested land	NA,NO		NA,NO
Harvested land	NO		NO
Deforestation	1 297 750		1 297 750
Forest management	–7 897 750		–7 897 750
Article 3.3 offset[c]	–1 297 750		–1 297 750
Forest management cap[c]	–6 600 000		–6 600 000
Cropland management	NA		NA
Grazing land management	NA		NA
Revegetation	NA		NA

[7] The SEF comparison report is prepared by the international transaction log (ITL) administrator and provides information on the outcome of the comparison of data contained in the Party's SEF tables with corresponding records contained in the ITL.

Abbreviations: CRF = common reporting format, KP-LULUCF = land use, land-use change and forestry emissions and removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, NA = not applicable, NO = not occurring.

[a] The values included under the 2014 annual submission are the cumulative accounting values for 2008, 2009, 2010, 2011 and 2012, as reported in the accounting table of the KP-LULUCF CRF tables for the inventory year 2012.

[b] The "final accounting quantity" is the quantity of Kyoto Protocol units that the Party shall issue or cancel under each activity under Article 3, paragraph 3, and paragraph 4, if relevant, based on the final accounting quantity in the 2014 annual submission.

[c] "Article 3.3 offset" for the first commitment period: a Party included in Annex I to the Convention that incurs a net source of emissions under the provisions of Article 3, paragraph 3, of the Kyoto Protocol may account for anthropogenic greenhouse gas emissions by sources and removals by sinks in areas under forest management under Article 3, paragraph 4, up to a level that is equal to the net source of emissions under the provisions of Article 3, paragraph 3, but not greater than 9.0 megatonnes of carbon times five, if the total anthropogenic greenhouse gas emissions by sources and removals by sinks in the managed forest since 1990 is equal to, or larger than, the net source of emissions incurred under Article 3, paragraph 3.

[d] In accordance with decision 16/CMP.1, annex, paragraph 11, for the first commitment period only, additions to and subtractions from the assigned amount of a Party resulting from forest management under Article 3, paragraph 4, of the Kyoto Protocol after the application of decision 16/CMP.1, annex, paragraph 10, and resulting from forest management project activities undertaken under Article 6, shall not exceed the value inscribed in the appendix of the annex to decision 16/CMP.1, times five.

97. Based on the information provided in table 7 for the activity deforestation, Slovenia shall cancel 1,297,750 assigned amount units, emission reduction units, certified emissions reduction units and/or removal units (RMUs) in its national registry.

98. Based on the information provided in table 7 for the activity forest management, Slovenia shall issue 7,897,750 RMUs in its national registry.

Calculation of the commitment period reserve

99. Slovenia has reported its commitment period reserve in its 2014 annual submission. The Party reported that its commitment period reserve has not changed since the initial report review (84,265,734 t CO_2 eq) as it is based on the assigned amount and not the most recently reviewed inventory.

3. Changes to the national system

100. Slovenia reported that there are changes in its national system since the previous annual submission. The Party described the change in its NIR, which is that, in the response to the strong recommendation formulated in the course of the 2013 in-country review, the Minister for Agriculture and Environment has secured the additional administrative resources to carry out the necessary QA/QC activities. The Minister has nominated a QA/QC manager as well as a control team of experts with the following main tasks:

(a) Develop a QA/QC plan in accordance with the IPCC good practice guidance;

(b) Develop an inventory improvement plan;

(c) Implement general inventory QC procedures (tier 1) in accordance with the QA/QC plan following the IPCC good practice guidance;

(d) Ensure the collaboration of other members of the team with the inventory experts and QA/QC manager when necessary;

(e) Regularly implement a partial review of QA/QC by sector, scheduled by the team;

(f) Prepare an expert framework for the elaboration of emission inventories for land use.

101. The ERT concluded that the Party's national system continues to be in accordance with the requirements of national systems outlined in decision 19/CMP.1.

4. Changes to the national registry

102. Slovenia reported that there are changes in its national registry since the previous annual submission. The Party described the changes in its NIR, as follows: an additional registry administrator was nominated; the diagram of the database structure has been updated; software has been updated (releases 5 and 6), although changes were limited and only affected the EU ETS functionality, and both regression testing and tests on the new functionality were successfully carried out prior to the release of the version to production; and public availability of the register information has been improved.

103. The ERT concluded that, taking into account the confirmed changes in the national registry, Slovenia's national registry continues to perform the functions set out in the annex to decision 13/CMP.1 and the annex to decision 5/CMP.1 and continues to adhere to the technical standards for data exchange between registry systems in accordance with relevant CMP decisions.

5. Minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol

104. Consistent with paragraph 23 of the annex to decision 15/CMP.1, Slovenia provided information relating to how it is striving, under Article 3, paragraph 14, of the Kyoto Protocol, to implement its commitments in such a way as to minimize adverse social, environmental and economic impacts on developing country Parties, particularly those identified in Article 4, paragraphs 8 and 9, of the Convention.

105. Slovenia reported that there are no changes in its reporting of the minimization of adverse impacts in accordance with Article 3, paragraph 14, since the previous annual submission. The ERT concluded that the information provided continues to be complete and transparent.

III. Conclusions and recommendations

A. Conclusions

106. Table 8 summarizes the ERT's conclusions on the 2014 annual submission of Slovenia, in accordance with the Article 8 review guidelines.

Table 8
Expert review team's conclusions on the 2014 annual submission of Slovenia

Issue	*Expert review team assessment*	*Paragraph cross references for identified problems*
The ERT concludes that the inventory submission of Slovenia is complete with regard to categories, gases, years and geographical boundaries and contains both an NIR and CRF tables for 1986–2012		
Annex A sources[a]	Complete	
LULUCF[a]	Not complete	Table 3 and paragraph 67
KP-LULUCF	Complete	

Issue	Expert review team assessment	Paragraph cross references for identified problems
The ERT concludes that the inventory submission of Slovenia has been prepared and reported in accordance with the UNFCCC reporting guidelines	Yes	
The Party's inventory is in accordance with the Revised 1996 IPCC Guidelines, the IPCC good practice guidance and the IPCC good practice guidance for LULUCF	Generally	31
The submission of information required under Article 7, paragraph 1, of the Kyoto Protocol has been prepared and reported in accordance with decision 15/CMP.1	Yes	
Party has reported information on its accounting of Kyoto Protocol units in accordance with decision 15/CMP.1, annex, chapter I.E, and used the required reporting format tables as specified by decision 14/CMP.1	Yes	
The national system continues to perform its required functions as set out in the annex to decision 19/CMP.1	Yes	
The national registry continues to perform the functions set out in the annex to decision 13/CMP.1 and the annex to decision 5/CMP.1 and continues to adhere to the technical standards for data exchange between registry systems in accordance with relevant CMP decisions	Yes	
Did the Party provide information in the NIR on changes in its reporting of the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol?	Yes	

Abbreviations: Annex A sources = source categories included in Annex A to the Kyoto Protocol, CMP = Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol, CRF = common reporting format, ERT = expert review team, IPCC = Intergovernmental Panel on Climate Change, IPCC good practice guidance = IPCC *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories*, IPCC good practice guidance for LULUCF = IPCC *Good Practice Guidance for Land Use, Land-Use Change and Forestry*, KP-LULUCF = LULUCF emissions and removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, LULUCF = land use, land-use change and forestry, NIR = national inventory report, Revised 1996 IPCC Guidelines = *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories*, UNFCCC reporting guidelines = "Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual inventories".

[a] The assessment of completeness by the ERT considers only the completeness of reporting of mandatory categories (i.e. categories for which methods and default emission factors are provided in the Revised 1996 IPCC Guidelines, the IPCC good practice guidance or the IPCC good practice guidance for LULUCF).

B. Recommendations

107. The ERT identified the issues for improvement listed in table 9. All recommendations are for the next annual submission, unless otherwise specified.

Table 9
Recommendations identified by the expert review team

Sector	*Category, cross-cutting issue*	*Recommendation*	*Reiteration of previous recommendation?*	*Paragraph cross-references*
Cross-cutting	*Completeness*	Estimate and report emissions from all mandatory categories	No	Table 3
	Inventory management	Fully implement a structured centralized archiving system	Yes	17
Energy	Reference approach	Provide more information in the national energy balance tables (annex 4 of the NIR), such as losses and statistical differences	No	24
	Quality assurance/quality control	Ensure the consistency of information provided in the CRF table and the NIR, and improve the implementation of QC procedures in order to prevent errors	Yes	25, 27, 30
	International bunker fuels	Provide transparent explanations for recalculations	No	26
	Feedstocks and non-energy use of fuels	Continue to improve its reporting in CRF table 1.A(d) by removing identified inconsistencies	Yes	28
	Stationary combustion: liquid, solid and gaseous fuels – CO_2	Provide more explanation for the apparent inconsistency in reporting for sub-bituminous coal for the period 1986–1994, or provide emission estimates for this fuel	No	29
		Develop country-specific CO_2 EFs for all fuels that have a significant share in the fuel mix for each category, in order to improve the accuracy of the estimates	Yes	31
		Provide more information for each specific biomass fuel in CRF table 1.A(a)	No	32
		Update the coefficient for the estimation of fuel consumption (7.1 t/1000 hectares) for agricultural activities since 2000	Yes	33
		Provide disaggregated AD and CO_2 emission estimates according to the specific types of industry included under manufacturing industries and construction	Yes	34
		Continue to improve the characterization of the physical and chemical properties of gasoline and diesel fuel for road transportation and report on the results achieved	Yes	35

Sector	Category/cross-cutting issue	Recommendation	Reiteration of previous recommendation?	Paragraph cross-references
Industrial processes and solvent and other product use	QA/QC	Include a separate chapter in the NIR for category-specific QA/QC for lime production	No	42
		Continue to strengthen its QC procedures to avoid inconsistencies between the CRF and NIR to occur	No	44
	Limestone and dolomite use – CO_2	Obtain AD and estimate the emissions from bricks and ceramics production for the period 1986–2004 in order to ensure a complete and consistent time series	No	43
	Consumption of halocarbons and SF_6 – HFCs	Update the information in the NIR regarding emissions from disposal of domestic refrigeration	No	44
		Include justification in the NIR for the use of country-specific values for the lifetime of domestic refrigeration and air-conditioning equipment	No	45
	Consumption of halocarbons and SF_6 – SF_6	Update the information in the NIR regarding emissions from disposal of electrical equipment and strengthen the QC process for monitoring the conformity of the NIR and the CRF tables	Yes	46
	Nitric acid production – N_2O	Improve the transparency of the NIR by providing the justification for the choice of the country-specific EF	No	47
Agriculture	Enteric fermentation – CH_4	Improve the transparency of the reporting by including additional information (i.e. weight and daily weight gain of each category of non-dairy cattle) in its NIR	No	50
	Manure management – CH_4 and N_2O	Include the latest information obtained by the Statistical Office of the Republic of Slovenia on manure management systems applied on cattle farms for updating the country-specific matrix on AWMS, and take into consideration housing technology types	Yes	51
		Conduct an investigation and update the AWMS matrix for swine to take in consideration the practice of organic farming in recent years	No	52
		Provide a description of the development of the average Nex rate for swine	Yes	54

Sector	Category cross-cutting issue	Recommendation	Reiteration of previous recommendation?	Paragraph cross references
LULUCF	Cross-cutting	Improve the land representation data used to report LULUCF emissions and removals under the Convention by reconciling all data on areas contained in its databases, land-use maps, as well as data collected from observations	Yes	60
	Forest land remaining forest land – CO_2	Collect additional data on merchantable volume in order to improve its estimates using interpolation/extrapolation and provide explanations to support the claim that the interpolation/extrapolation methods are in accordance with the IPCC good practice guidance	No	61
		Use the notation key "IE" in CRF table 5.A instead of "NA", where the stock change method was used	No	61
		Improve the land classification by subtracting young forest (less than 20 years old) and classify this as land converted to forest land	No	62
		Search for additional data on dead wood stocks collected from observations for some of the years prior to and after 2007 in order to improve the estimates based on interpolation/extrapolation	No	63
	Cropland remaining cropland – CO_2	Collect data on land area in perennial cropland and estimate emissions and removals in order to enhance the completeness of the inventory	Yes	67
	Land converted to cropland – CO_2	Determine and use country-specific parameters such as the changes in carbon stocks from one year of cropland growth for perennial and annual croplands	No	68
	Land converted to grassland – CO_2	Determine and use country-specific data on changes in carbon stocks from one year of grassland growth	No	69
	Biomass burning – CH_4, N_2O	Collect additional data on growing stock in order to limit the application of interpolation/extrapolation over a long period	No	71
Waste	Transparency	Enhance the transparency of the sector overview in such areas as the data sources for waste allocation, the overall situation with waste treatment and the assumptions applied when choosing country-specific values for parameters	Yes	74
	Solid waste disposal on land – CH_4	Ensure that the use of multiple sources of data for MSW disposal for different periods ensures that that the time series for AD are in accordance with	Yes	75

Source	Category (source/sink) or issue	Recommendation	Reiteration of previous recommendation?	Paragraph cross-references
		chapter 7 of the IPCC good practice guidance		
		Review the method used to derive the MCF factors for sludge from industrial wastewater treatment and use the correct definition of MCF, taking into consideration the fraction of waste that decomposes aerobically	No	76
		Include in the NIR more information on the context of the results of the screening analyses for the fraction of degradable waste and degradable organic carbon	Yes	77
	Wastewater handling – CH_4	Improve the transparency of its reporting by including clear explanations about recalculations performed	No	79
		Ensure that sufficient transparent explanations are provided in the NIR of the assumptions made in deriving country-specific values for parameters, such as methane conversion factors for secondarily treated wastewater and for sludge treatment	Yes	80
	Waste incineration – CO_2 and N_2O	Include information about the incineration of sewage sludge in the waste sector of the NIR	No	83
KP-LULUCF	Deforestation – CO_2	Provide data on deforested land areas in the time series 2008–2012 that justify the large inter-annual decrease in CO_2 net emissions between 2010 and 2012	No	87

Abbreviations: AD = activity data, AWMS = animal waste management system, CRF = common reporting format, EF = emission factor, IE = included elsewhere, IPCC = Intergovernmental Panel on Climate Change, IPCC good practice guidance = IPCC *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories*, LULUCF = land use, land-use change and forestry, MCF = methane correction factor, MSW = municipal solid waste, NIR = national inventory report, NA = not applicable, Nex = nitrogen excretion, QA/QC = quality assurance/quality control.

IV. Questions of implementation

108. No questions of implementation were identified by the ERT during the review.

Annex I

Information to be included in the compilation and accounting database

Table 10

Information to be included in the compilation and accounting database in t CO_2 eq for 2012, including the commitment period reserve

	As reported	*Revised estimates*	*Adjustment*[a]	*Final*[b]
Commitment period reserve	84 265 734			84 265 734
Annex A emissions for 2012				
CO_2	15 674 759			15 674 759
CH_4	1 868 293			1 868 293
N_2O	1 106 530			1 106 530
HFCs	218 634			218 634
PFCs	25 704			25 704
SF_6	17 062			17 062
Total Annex A sources	**18 910 982**			**18 910 982**
Activities under Article 3, paragraph 3, for 2012				
3.3 Afforestation and reforestation on non-harvested land for 2012	NA, NO			NA, NO
3.3 Afforestation and reforestation on harvested land for 2012	NA, NO			NA, NO
3.3 Deforestation for 2012	221 761			221 761
Activities under Article 3, paragraph 4, for 2012[c]				
3.4 Forest management for 2012	−6 250 224			−6 250 224
3.4 Cropland management for 2012				
3.4 Cropland management for the base year				
3.4 Grazing land management for 2012				
3.4 Grazing land management for the base year				
3.4 Revegetation for 2012				
3.4 Revegetation for the base year				

Abbreviations: Annex A sources = source categories included in Annex A to the Kyoto Protocol; NA = not applicable; NO = not occurring.

[a] "Adjustment" is relevant only for Parties for which the expert review team (ERT) has calculated one or more adjustment(s).

[b] "Final" includes revised estimates, if any, and/or adjustments, if any.

[c] The values for "Total Annex A sources" in the columns "As reported", "Revised estimates" and "Final" may not equal the sum of the values for the gases in those columns owing to rounding.

[d] Activities under Article 3, paragraph 4, are relevant only for Parties that elected one or more such activities.

Table 11
Information to be included in the compilation and accounting database in t CO_2 eq for 2011

	As reported	*Revised estimates*	*Adjustment*[a]	*Final*[b]
Annex A emissions for 2011				
CO_2	16 177 906			16 177 906
CH_4	1 915 794			1 915 794
N_2O	1 106 807			1 106 807
HFCs	216 935			216 935
PFCs	28 611			28 611
SF_6	16 505			16 505
Total Annex A sources	**19 462 557**			**19 462 557**
Activities under Article 3, paragraph 3, for 2011				
3.3 Afforestation and reforestation on non-harvested land for 2011	NA, NO			NA, NO
3.3 Afforestation and reforestation on harvested land for 2011	NA, NO			NA, NO
3.3 Deforestation for 2011	272 688			272 688
Activities under Article 3, paragraph 4, for 2011[c]				
3.4 Forest management for 2011	-6 284 287			-6 284 287
3.4 Cropland management for 2011				
3.4 Cropland management for the base year				
3.4 Grazing land management for 2011				
3.4 Grazing land management for the base year				
3.4 Revegetation for 2011				
3.4 Revegetation for the base year				

Abbreviations: Annex A sources = source categories included in Annex A to the Kyoto Protocol, NA = not applicable, NO = not occurring.

[a] "Adjustment" is relevant only for Parties for which the expert review team (ERT) has calculated one or more adjustment(s).

[b] "Final" includes revised estimates, if any, and/or adjustments, if any.

[c] The values for "Total Annex A sources" in the columns "As reported", "Revised estimates" and "Final" may not equal the sum of the values for the gases in those columns owing to rounding.

[d] Activities under Article 3, paragraph 4, are relevant only for Parties that elected one or more such activities.

Table 12
Information to be included in the compilation and accounting database in t CO_2 eq for 2010

	As reported	*Revised estimates*	*Adjustment*[a]	*Final*[b]
Annex A emissions for 2010				
CO_2	16 136 406			16 136 406
CH_4	1 920 854			1 920 854
N_2O	1 108 928			1 108 928
HFCs	214 965			214 965
PFCs	13 682			13 682
SF_6	16 542			16 542
Total Annex A sources	**19 411 379**			**19 411 379**
Activities under Article 3, paragraph 3, for 2010				
3.3 Afforestation and reforestation on non-harvested land for 2010	NA, NO			NA, NO
3.3 Afforestation and reforestation on harvested land for 2010	NA, NO			NA, NO
3.3 Deforestation for 2010	339 803			339 803
Activities under Article 3, paragraph 4, for 2010[c]				
3.4 Forest management for 2010	-6 294 956			-6 294 956
3.4 Cropland management for 2010				
3.4 Cropland management for the base year				
3.4 Grazing land management for 2010				
3.4 Grazing land management for the base year				
3.4 Revegetation for 2010				
3.4 Revegetation for the base year				

Abbreviations: Annex A sources = source categories included in Annex A to the Kyoto Protocol, NA = not applicable, NO = not occurring.

[a] "Adjustment" is relevant only for Parties for which the expert review team (ERT) has calculated one or more adjustment(s).

[b] "Final" includes revised estimates, if any, and/or adjustments, if any.

[c] The values for "Total Annex A sources" in the columns "As reported", "Revised estimates" and "Final" may not equal the sum of the values for the gases in those columns owing to rounding.

[d] Activities under Article 3, paragraph 4, are relevant only for Parties that elected one or more such activities.

Table 13

Information to be included in the compilation and accounting database in t CO_2 eq for 2009

	As reported	*Revised estimates*	*Adjustment*[b]	*Final*[b]
Annex A emissions for 2009				
CO_2	16 061 097			16 061 097
CH_4	1 953 645			1 953 645
N_2O	1 139 505			1 139 505
HFCs	195 552			195 552
PFCs	7 433			7 433
SF_6	15 919			15 919
Total Annex A sources[c]	**19 373 150**			**19 373 150**
Activities under Article 3, paragraph 3, for 2009				
3.3 Afforestation and reforestation on non-harvested land for 2009	NA, NO			NA, NO
3.3 Afforestation and reforestation on harvested land for 2009	NA, NO			NA, NO
3.3 Deforestation for 2009	301 500			301 500
Activities under Article 3, paragraph 4, for 2009[d]				
3.4 Forest management for 2009	−6 294 148			−6 294 148
3.4 Cropland management for 2009				
3.4 Cropland management for the base year				
3.4 Grazing land management for 2009				
3.4 Grazing land management for the base year				
3.4 Revegetation for 2009				
3.4 Revegetation for the base year				

Abbreviations: Annex A sources = source categories included in Annex A to the Kyoto Protocol, NA = not applicable, NO = not occurring.

[a] "Adjustment" is relevant only for Parties for which the expert review team (ERT) has calculated one or more adjustment(s).

[b] "Final" includes revised estimates, if any, and/or adjustments, if any.

[c] The values for "Total Annex A sources" in the columns "As reported", "Revised estimates" and "Final" may not equal the sum of the values for the gases in those columns owing to rounding.

[d] Activities under Article 3, paragraph 4, are relevant only for Parties that elected one or more such activities.

Table 14
Information to be included in the compilation and accounting database in t CO_2 eq for 2008

	As reported	*Revised estimates*	*Adjustment*[a]	*Final*[b]
Annex A emissions for 2008				
CO_2	18 003 009			18 003 009
CH_4	2 016 710			2 016 710
N_2O	1 139 012			1 139 012
HFCs	188 049			188 049
PFCs	20 915			20 915
SF_6	16 678			16 678
Total Annex A sources	**21 384 373**			**21 384 373**
Activities under Article 3, paragraph 3, for 2008				
3.3 Afforestation and reforestation on non-harvested land for 2008	NA, NO			NA, NO
3.3 Afforestation and reforestation on harvested land for 2008	NA, NO			NA, NO
3.3 Deforestation for 2008	161 998			161 998
Activities under Article 3, paragraph 4, for 2008[c]				
3.4 Forest management for 2008	–6 294 149			–6 294 149
3.4 Cropland management for 2008				
3.4 Cropland management for the base year				
3.4 Grazing land management for 2008				
3.4 Grazing land management for the base year				
3.4 Revegetation for 2008				
3.4 Revegetation for the base year				

Abbreviations: Annex A sources = source categories included in Annex A to the Kyoto Protocol, NA = not applicable, NO = not occurring.

[a] "Adjustment" is relevant only for Parties for which the expert review team (ERT) has calculated one or more adjustment(s).

[b] "Final" includes revised estimates, if any, and/or adjustments, if any.

[c] The values for "Total Annex A sources" in the columns "As reported", "Revised estimates" and "Final" may not equal the sum of the values for the gases in those columns owing to rounding.

[d] Activities under Article 3, paragraph 4, are relevant only for Parties that elected one or more such activities.

Annex II

Documents and information used during the review

A. Reference documents

Intergovernmental Panel on Climate Change. *2006 IPCC Guidelines for National Greenhouse Gas Inventories*. Available at <http://www.ipcc-nggip.iges.or.jp/public/2006gl/index.html>.

Intergovernmental Panel on Climate Change. *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories*. Available at <http://www.ipcc-nggip.iges.or.jp/public/gl/invs1.htm>.

Intergovernmental Panel on Climate Change. *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories*. Available at <http://www.ipcc-nggip.iges.or.jp/public/gp/english/>.

Intergovernmental Panel on Climate Change. *Good Practice Guidance for Land Use, Land-Use Change and Forestry*. Available at <http://www.ipcc-nggip.iges.or.jp/public/gpglulucf/gpglulucf.htm>.

"Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual inventories". FCCC/SBSTA/2006/9. Available at <http://unfccc.int/resource/docs/2006/sbsta/eng/09.pdf>.

"Guidelines for the technical review of greenhouse gas inventories from Parties included in Annex I to the Convention". FCCC/CP/2002/8. Available at <http://unfccc.int/resource/docs/cop8/08.pdf>.

"Guidelines for national systems for the estimation of anthropogenic greenhouse gas emissions by sources and removals by sinks under Article 5, paragraph 1, of the Kyoto Protocol". Decision 19/CMP.1. Available at <http://unfccc.int/resource/docs/2005/cmp1/eng/08a03.pdf#page=14>.

"Guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol". Decision 15/CMP.1. Available at <http://unfccc.int/resource/docs/2005/cmp1/eng/08a02.pdf#page=54>.

"Guidelines for review under Article 8 of the Kyoto Protocol". Decision 22/CMP.1. Available at <http://unfccc.int/resource/docs/2005/cmp1/eng/08a03.pdf#page=51>.

Status report for Slovenia 2014. Available at <http://unfccc.int/resource/docs/2014/asr/svn.pdf>.

Synthesis and assessment report on the greenhouse gas inventories submitted in 2014. Available at <http://unfccc.int/resource/webdocs/sai/2014.pdf>.

FCCC/ARR/2013/SVN. Report of the individual review of the annual submission of Slovenia submitted in 2013. Available at <http://unfccc.int/resource/docs/2014/arr/svn.pdf>.

Standard independent assessment report template, parts I and 2. Available at <http://unfccc.int/kyoto_protocol/registry_systems/independent_assessment_reports/items/4061.php>.

B. Additional information provided by the Party

Responses to questions during the review were received from Ms. Tajda Mekinda Majaron (Slovenian Environment Agency) including additional material on the methodology and assumptions used. The following documents[1] were also provided by Slovenia:

Elektroinštitut Milan Vidmar. 2004. *National emission factor for lignite from Velenje coalmine: A review of ultimate analyses of lignite*. Holding Slovenske elektrarne d.o.o.

Milan KOBAL, Klemen ELER, Primož SIMONČIČ, Hojka KRAIGHER. 2014 *Assessment of organic matter changes in the soil of the Brdo plot under different climate change scenarios through the TASS07 model application*. Acta Silvae et Ligni 103 (2014), 21-34.

[1] Reproduced as received from the Party

Annex III

Acronyms and abbreviations

AD	activity data
AWMS	animal waste management systems
CH_4	methane
CMP	Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol
CO_2	carbon dioxide
CO_2 eq	carbon dioxide equivalent
COD	chemical oxygen demand
CRF	common reporting format
EF	emission factor
ERT	expert review team
EU ETS	European Union Emissions Trading System
FAO	Food and Agriculture Organization of the United Nations
GHG	greenhouse gas; unless indicated otherwise, GHG emissions are the sum of CO_2, CH_4, N_2O, HFCs, PFCs and SF_6 without GHG emissions and removals from LULUCF
ha	hectare
HFCs	hydrofluorocarbons
IE	included elsewhere
IPCC	Intergovernmental Panel on Climate Change
ITL	international transaction log
kg	kilogram (1 kg = 1,000 grams)
KP-LULUCF	land use, land-use change and forestry emissions and removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol
LULUCF	land use, land-use change and forestry
m	cubic metre
MCF	methane correction factor
MSW	municipal solid waste
N	nitrogen
N_2O	nitrous oxide
NA	not applicable
NCV	net calorific value
NE	not estimated
Nex	nitrogen excretion
NFI	national forest inventory
NIR	national inventory report
NO	not occurring
PFCs	perfluorocarbons
PJ	petajoule (1 PJ = 10^{15} joule)
QA/QC	quality assurance/quality control
RMU	removal unit
SEF	standard electronic format
SF_6	sulphur hexafluoride
SIAR	standard independent assessment report
SWDS	solid waste disposal site
TJ	terajoule (1 TJ = 10^{12} joule)
UNFCCC	United Nations Framework Convention on Climate Change